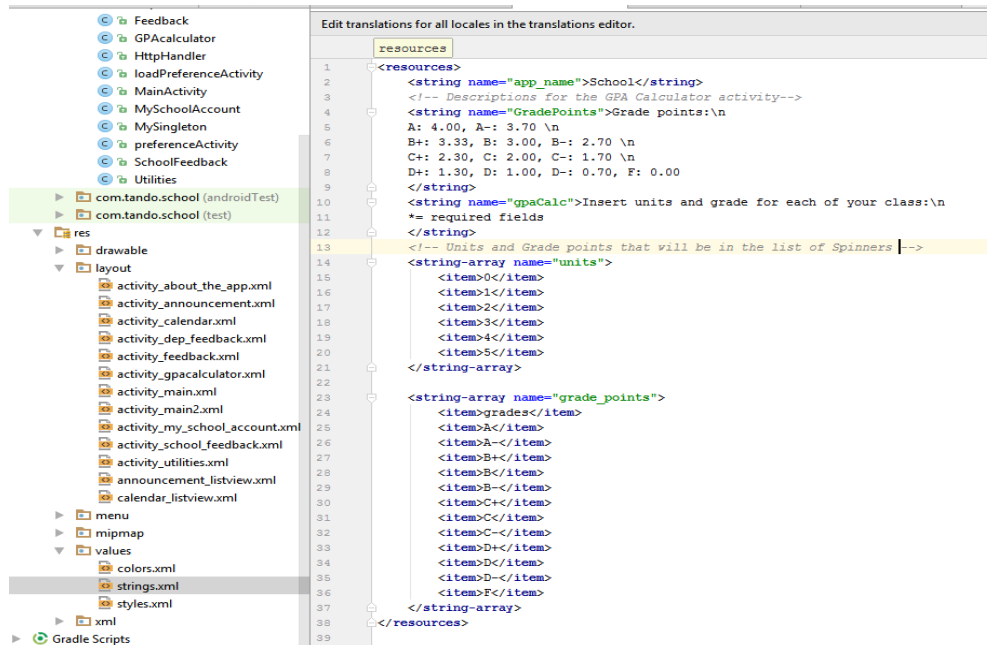


CSE575-Section4: GPA Calculator activity

- I. Layout: we will use Spinner to make a dropdown list of items, such as; grade points and grades.

1. Create some value strings

Click values > strings.xml > add some strings for the activity as the picture below



2. Activity_gpacalculator.xml

```
<?xml version="1.0" encoding="utf-8" ?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context="com.tando.school.GPACalculator"
    android:orientation="vertical">
    <ScrollView
        android:layout_width="match_parent"
        android:layout_height="match_parent">
        <LinearLayout
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:orientation="vertical">
            <!--Logo -->
            <ImageView
                android:id="@+id/logo"
                android:layout_width="150dp"
                android:layout_height="100dp"
                android:background="@drawable/school_logo"
                android:layout_gravity="center"/>
            <TextView
                android:layout_marginLeft="10dp"
                android:layout_width="match_parent"
                android:layout_height="wrap_content"
                android:textStyle="bold"
```

```

        android:textColor="#000"
        android:paddingTop="5dp"
        android:text="@string/GradePoints"
        android:textSize="18dp"
    />
<TextView
    android:layout_marginLeft="10dp"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:textStyle="bold"
    android:textColor="#000"
    android:layout_marginTop="10dp"
    android:layout_marginBottom="7dp"
    android:text="@string/gpaCalc"/>
<GridLayout
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="5dp"
    android:layout_marginBottom="5dp"
    android:layout_marginLeft="10dp">
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Units*:"
        android:layout_column="0"
        android:layout_row="0"
        android:textColor="#000"
        android:textStyle="bold"
    />
    <android.support.v7.widget.AppCompatSpinner
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/spinner1"
        android:layout_column="1"
        android:layout_row="0">
    </android.support.v7.widget.AppCompatSpinner>
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Grade*:"
        android:layout_column="2"
        android:layout_row="0"
        android:textColor="#000"
        android:textStyle="bold"
    />
    <android.support.v7.widget.AppCompatSpinner
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/spinner2"
        android:layout_column="3"
        android:layout_row="0">
    </android.support.v7.widget.AppCompatSpinner>
    <Button
        android:id="@+id/bntInsert"
        android:layout_width="wrap_content"
        android:layout_height="45dp"
        android:text="INSERT"
        android:layout_row="0"
        android:layout_column="4"
        android:layout_marginRight="15dp"/>
</GridLayout>
<Button
    android:id="@+id/calcGPA"

```

```

        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center"
        android:layout_marginTop="5dp"
        android:text="Compute"
    />
<Button
    android:id="@+id/bntClear"
    android:layout_width="wrap_content"
    android:layout_height="45dp"
    android:text="Reset"
    android:layout_gravity="center"
/>

<TextView
    android:id="@+id/resultTotalUnits"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Total units:"
    android:textColor="#000"
    android:layout_marginTop="5dp"
    android:layout_marginBottom="5dp"
    android:textStyle="bold"
    android:layout_marginLeft="10dp"/>

<TextView
    android:id="@+id/resultTotalGrades"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Total grade points:"
    android:textColor="#000"
    android:layout_marginTop="5dp"
    android:layout_marginBottom="5dp"
    android:textStyle="bold"
    android:layout_marginLeft="10dp"/>

<TextView
    android:id="@+id/gpa"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Your GPA:"
    android:textColor="#000"
    android:layout_marginTop="5dp"
    android:layout_marginBottom="10dp"
    android:textStyle="bold"
    android:layout_marginLeft="10dp"/>
</LinearLayout>
</ScrollView>
</LinearLayout>

```

II. GPACalculator.java (explanations are in the comments)

```

package com.tando.school;

import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.ArrayAdapter;
import android.widget.Button;
import android.widget.Spinner;
import android.widget.TextView;
import android.widget.Toast;

```

```

import java.text.DecimalFormat;
import java.util.ArrayList;

public class GPACalculator extends AppCompatActivity {
    //Declare an array to store units type is double
    public static ArrayList<Double> unitsAdd = new ArrayList<Double>();
    //Declare an array to store grade points
    public static ArrayList<Double> gradeAdd = new ArrayList<Double>();
    //Declare an array to store the result of units * gradepoints
    public static ArrayList<Double> gradePoints = new ArrayList<Double>();
    //Declare the spinners
    Spinner spinner1, spinner2;
    //Declare adapter to connect array in string value
    ArrayAdapter<CharSequence> adapter1;
    //Adapter 2
    ArrayAdapter<CharSequence> adapter2;
    //Declare some double variables
    Double numofUnits, numofGrades, gradepoints, totalGPA, totalGrades = 0.00,
    totalUnits = 0.00;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_gpacalculator);

        //Link spinners to their IDs
        spinner1 = (Spinner) findViewById(R.id.spinner1);
        spinner2 = (Spinner) findViewById(R.id.spinner2);
        //link adapters to their strings and style the drop-down menu
        adapter1 = ArrayAdapter.createFromResource(GPACalculator.this,
        R.array.units,
            android.R.layout.simple_spinner_item);
        //Set Drop-down style
        adapter1.setDropDownViewResource(android.R.layout.simple_spinner_dropdown_item);
        adapter2 = ArrayAdapter.createFromResource(GPACalculator.this,
        R.array.grade_points,
            android.R.layout.simple_spinner_item);
        //Set Drop-down style
        adapter2.setDropDownViewResource(android.R.layout.simple_spinner_dropdown_item);
        //display the adapter contain the lists
        spinner1.setAdapter(adapter1);
        spinner2.setAdapter(adapter2);

        //declare buttons
        Button bntInsert = (Button) findViewById(R.id.bntInsert);
        Button bntCountGPA = (Button) findViewById(R.id.calcGPA);
        Button bntClear = (Button) findViewById(R.id.bntClear);

        //textView for total units
        final TextView resultTotalUnits = (TextView)
        findViewById(R.id.resultTotalUnits);
        //textView for total grade points
        final TextView resultTotalGrades = (TextView)
        findViewById(R.id.resultTotalGrades);
        //textView for GPA
        final TextView resultGPA = (TextView) findViewById(R.id.gpa);

        //Insert button function
        bntInsert.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                //Declare a string for selected Unit_items

```

```

String unitSelected = spinner1.getSelectedItem().toString();
//Covert string to double
numOfUnits = Double.parseDouble(unitSelected);
//add double value into array
unitsAdd.add(numOfUnits);
//Declare a string for selected Grades_items
String gradeSelected = spinner2.getSelectedItem().toString();
//Convert the letters into Doubles. For example A = 4.00
if (gradeSelected.equals("A")){
    numOfGrades = 4.00;
    gradeAdd.add(numOfGrades);
}
else if (gradeSelected.equals("A-")) {
    numOfGrades = 3.70;
    gradeAdd.add(numOfGrades);
}
else if (gradeSelected.equals("B+")) {
    numOfGrades = 3.33;
    gradeAdd.add(numOfGrades);
}
else if (gradeSelected.equals("B")) {
    numOfGrades = 3.00;
    gradeAdd.add(numOfGrades);
}
else if (gradeSelected.equals("B-")) {
    numOfGrades = 2.70;
    gradeAdd.add(numOfGrades);
}
else if (gradeSelected.equals("C+")) {
    numOfGrades = 2.30;
    gradeAdd.add(numOfGrades);
}
else if (gradeSelected.equals("C")) {
    numOfGrades = 2.00;
    gradeAdd.add(numOfGrades);
}
else if (gradeSelected.equals("C-")) {
    numOfGrades = 1.70;
    gradeAdd.add(numOfGrades);
}
else if (gradeSelected.equals("D+")) {
    numOfGrades = 1.30;
    gradeAdd.add(numOfGrades);
}
else if (gradeSelected.equals("D")) {
    numOfGrades = 1.00;
    gradeAdd.add(numOfGrades);
}
else if (gradeSelected.equals("D-")) {
    numOfGrades = 0.70;
    gradeAdd.add(numOfGrades);
}
else if (gradeSelected.equals("F")) {
    numOfGrades = 0.00;
    gradeAdd.add(numOfGrades);
}
else {
    //Nothing is selected
    Toast.makeText(getApplicationContext(), "Error!!!",
Toast.LENGTH_LONG).show();
}
//Display the Toast to let users know what they have inserted
Toast.makeText(getApplicationContext(),

```

```

        "You have inserted: " + numUnits + " units and " +
numOfGrades + " Grade Points",
        Toast.LENGTH_SHORT).show();
        //Function of GradePoints
        gradePoints = numUnits * numOfGrades;
        //add gradePoints into gradePoints array
        if (gradePoints >= 0) {
            gradePoints.add(gradePoints);
        } else {
            Toast.makeText(getApplicationContext(), "Error!!!",
Toast.LENGTH_LONG).show();
        }
        //Clear the spinner after pick strings from them
        spinner1.setSelection(0);
        spinner2.setSelection(0);
    }
});
//Count GPA button function
bntCountGPA.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        DecimalFormat format = new DecimalFormat("#.##");
        //Have to declare totalUnits = 0.00 from the beginning
        for(int i=0;i<unitsAdd.size();i++){
            //sum of all elements(units) in the array called units
            totalUnits += (unitsAdd.get(i));
        }
        //sum of all elements(gradePoint = numUnits * numOfGrades) in the
array gradePoints
        for(int j=0;j<gradePoints.size();j++){
            totalGrades += (gradePoints.get(j));
        }
        //Count GPA
        totalGPA = totalGrades / totalUnits;
        //Display the results in the TextView sections
        resultTotalUnits.setText("Total units:
"+Double.toString(totalUnits));
        //Display total gradePoints
        resultTotalGrades.setText("Total grade points:
"+format.format(totalGrades));
        //Display GPA
        resultGPA.setText("GPA: "+format.format(totalGPA));
        //Clear the array after button clicked
        totalGPA = 0.00;
        totalUnits = 0.00;
        totalGrades = 0.00;
        unitsAdd.clear();
        gradeAdd.clear();
        gradePoints.clear();
    }
});
//Clear function
bntClear.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        spinner1.setSelection(0);
        spinner2.setSelection(0);
        resultTotalUnits.setText("Total units: clear");
        resultTotalGrades.setText("Total grade points: clear");
        resultGPA.setText("Your GPA: clear");
        gradePoints.clear();
        unitsAdd.clear();
    }
});

```

```

        gradeAdd.clear();
        gradePoints.clear();
        Toast.makeText(GPACalculator.this, "Clear!",
            Toast.LENGTH_LONG).show();
    }
    });
}
}

```

Here is the GPA Calculator activity

Grade points:
A: 4.00, A-: 3.70
B+: 3.33, B: 3.00, B-: 2.70
C+: 2.30, C: 2.00, C-: 1.70
D+: 1.30, D: 1.00, D-: 0.70, F: 0.00

Insert units and grade for each of your class:
 * = required fields

Units*: 0 ▾ Grade*: grades ▾ **INSERT**

COMPUTE

RESET

Total units:
 Total grade points:
 Your GPA:

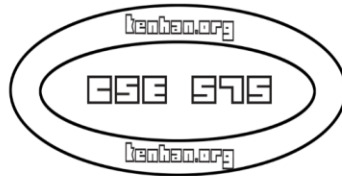
When we finished selecting from Spinners list and hit Insert button



LTE 8:44



GPA Calculator



Grade points:

A: 4.00, A-: 3.70

B+: 3.33, B: 3.00, B-: 2.70

C+: 2.30, C: 2.00, C-: 1.70

D+: 1.30, D: 1.00, D-: 0.70, F: 0.00

Insert units and grade for each of your class:

***= required fields**

Units*: 0 ▾ **Grade*:** grades ▾ **INSERT**

COMPUTE

RESET


Total units:


Total grade points:


Your GPA: You have inserted: 3.0 units and 4.0 Grade Points




When we click the compute button



LTE  8:46

 GPA Calculator



Grade points:
A: 4.00, A-: 3.70
B+: 3.33, B: 3.00, B-: 2.70
C+: 2.30, C: 2.00, C-: 1.70
D+: 1.30, D: 1.00, D-: 0.70, F: 0.00

Insert units and grade for each of your class:
*= required fields

Units*: 0 ▾ Grade*: grades ▾

INSERT


COMPUTE

RESET


Total units: 12.0


Total grade points: 39.4


GPA: 3.3




When we click the Reset button



LTE  8:47

 GPA Calculator



Grade points:
A: 4.00, A-: 3.70
B+: 3.33, B: 3.00, B-: 2.70
C+: 2.30, C: 2.00, C-: 1.70
D+: 1.30, D: 1.00, D-: 0.70, F: 0.00

Insert units and grade for each of your class:
*= required fields

Units*: 0 ▾ Grade*: grades ▾

INSERT

COMPUTE

RESET

Total units: clear

Total grade points: clear

Your GPA: clear

Clear!

